

ABSTRACT OF THE DISCLOSURE

The current invention features methods for reliably and controllably separating immunoglobulin half antibodies from immunoglobulin whole antibodies, as well as purified immunoglobulin half antibody preparations and purified immunoglobulin
5 whole antibody preparations while preserving biological activity. These dissociated half antibodies can be chromatographically separated from whole antibodies. There are four known subclasses of IgG molecules: IgG₁; IgG₂; IgG₃; and IgG₄. IgG₄ molecules differ from the other IgG isotypes in that the disulfide bonds that link the two heavy chain subunits together do not always form. Due to the non-covalent interactions that hold
10 the heavy chain subunits together, the heterogeneity of IgG₄ molecules is not apparent following gel filtration of purified IgG₄ protein. However, when purified IgG₄ protein is separated by denaturing polyacrylamide gel electrophoresis (SDS-PAGE) under non-reducing conditions, two distinct protein species can be identified – whole antibody and “half-antibodies.”